

Natural Stream Channel Classification

The Natural Stream Channel Classification System uses several definitive criteria for classification: 1) number of channels associated with a stream; 2) slope; 3) width-to-depth ratio; 4) entrenchment ratio; 5) sinuosity; and 6) bed material. This classification system uses the first five criteria to assign one of eight channel types to a reach of a stream. The eight types are designated A, B, C, D, DA, E, F, and G. Use of the Natural Stream Channel Classification System for a Level 1 classification requires the identification of several features in the field including bankfull width and depth (the stage at which the controlling channel forming flow occurs), slope, sinuosity, and valley morphology.

Prior to initiation of field efforts, available mapping of stream channel segments within the project study area was reviewed to estimate sinuosity. In the field, all stream channels were traversed to identify any significant changes in channel type. Estimations of channel width, bankfull depth, and flood-prone width were made at selected locations to verify channel type; these locations were selected because they were either representative of the stream as a whole or of a specific reach. Sinuosity was estimated in the field and compared to estimated sinuosity from the mapping. Slope was also estimated in the field. Two channel types were identified within the project study area: A and B. A brief description of each channel type found in the project study area follows.

- “A” type streams have a steeply sloped, relatively narrow and shallow, deeply entrenched channel with low sinuosity. “A” type channels are characterized by step-pool sequences, somewhat well defined meanders, and lack a well-developed floodplain.
- “B” type streams have a moderately sloped, relatively wide and shallow, somewhat entrenched channel with moderate sinuosity. “B” type channels are characterized by step-pool sequences, somewhat well defined meanders, and lack a well-developed floodplain.

Classification of stream reaches within the project study area is provided in **Table 9** in **Appendix C**. Project study area streams tend to be moderately to steeply sloped and lack a well-developed floodplain.

Cowardin Classification

All streams within the project study area are considered to be riverine systems (Cowardin *et al.* 1979). Riverine systems may be perennial or intermittent and are identified as those areas contained within a channel that are not dominated by trees, shrubs, persistent emergents, emergent mosses, or lichens, and contain less than 0.5 parts per thousand ocean-derived salts (Cowardin *et al.* 1979).

The Little Tennessee River has been classified as an upper perennial riverine system (R3). R3 systems have no tidal influence with a high gradient, fast moving water and tend to have very little floodplain development (Cowardin *et al.* 1979). Eleven other perennial streams within the project study area are also classified as R3 systems. The three intermittent streams within the project study area are classified as R4 systems. R4 systems contain flowing water for only part of